

and we feel that we should not be doing justice to Mr. Hudson if we did not quote for their benefit one specimen of this naturalist's writing. He is describing the habits of the Carancho (*Polyborus tharus*):—

"When several of these birds combine they are very bold. A friend told me that while voyaging on the Paraná River a black-necked Swan flew past him hotly pursued by three Caranchos; and I also witnessed an attack by four birds on a widely different species. I was standing on the bank of a stream on the Pampas watching a great concourse of birds of several kinds on the opposite shore, where the carcass of a horse, from which the hide had been stripped, lay at the edge of the water. One or two hundred Hooded Gulls and about a dozen Chimangos were gathered about the carcass, and close to them a very large flock of Glossy Ibises were wading about in the water, while amongst these, standing motionless in the water, was one solitary white Egret. Presently four Caranchos appeared, two adults and two young birds in brown plumage, and alighted on the ground near the carcass. The young birds advanced at once and began tearing at the flesh; while the two old birds stayed where they had alighted, as if disinclined to feed on half-putrid meat. Presently one of them sprang into the air and made a dash at the birds in the water, and instantly all the birds in the place rose into the air screaming loudly, the two young brown Caranchos only remaining on the ground. For a few moments I was in ignorance of the meaning of all this turmoil, when, suddenly, out of the confused black and white cloud of birds the Egret appeared, mounting vertically upwards with vigorous measured strokes. A moment later, and first one, then the other, Carancho also emerged from the cloud, evidently pursuing the Egret, and only then the two brown birds sprang into the air and joined in the chase. For some minutes I watched the four birds toiling upwards with a wild zigzag flight, while the Egret, still rising vertically, seemed to leave them hopelessly far behind. But before long they reached and passed it, and each bird as he did so would turn and rush downwards, striking at the Egret with his claws, and while one descended the others were rising, bird following bird with the greatest regularity. In this way they continued toiling upwards until the egret appeared a mere white speck in the sky, about which the four hateful black spots were still revolving. I had watched them from the first with the greatest excitement, and now began to fear that they would pass from sight and leave me in ignorance of the result; but at length they began to descend, and then it looked as if the Egret had lost all hope, for it was dropping very rapidly, while the four birds were all close to it striking at it every three or four seconds. The descent for the last half of the distance was exceedingly rapid, and the birds would have come down almost at the very spot they started from, which was about forty yards from where I stood, but the Egret was driven aside, and sloping rapidly down struck the earth at a distance of two hundred and fifty yards from the starting point. Scarcely had it touched the ground before the hungry quartette were tearing it with their beaks. They were all equally hungry no doubt, and perhaps the old birds were even hungrier than their young; and I am quite sure that if the flesh of the dead horse had not been so far advanced towards putrefaction they would not have attempted the conquest of the Egret. I have so frequently seen a pure white bird singled out for attack in this way, that it has always been a great subject of wonder to me how the two common species of snow-white Herons in South America are able to maintain their existence; for their whiteness exceeds that of other white waterfowl, while, compared with Swans, Storks, and the Wood-ibis, they are small and feeble. I am sure that if these four Caranchos had attacked a Glossy Ibis they would have found it an easier

conquest; yet they singled out the egret, purely, I believe, on account of its shining white conspicuous plumage."

In his introduction Dr. Sclater gives a *résumé* of the number of genera and species inhabiting the Argentine Republic, and shows that the avifauna of that portion of South America belongs to the Patagonian sub-region. A little sketch-map would have been useful, to show the configuration of the country and the proportions of the mountain-ranges, as it is evident that a district which can boast of a Dipper, and be at the same time the home of two Cariamas, must possess elements of two very different avifaunæ. Some day, no doubt, an exact exploration, such as that now being undertaken in Mexico by Messrs. Salvin and Godman, will trace the limits of the avifaunæ of the Pampas and the mountain regions. If Mr. Hudson could only be induced to resume his work of exploration and visit the interior of the Argentine Republic, the results would be, we venture to say, of the first importance to science.

Dr. Sclater, we notice, draws his comparisons of the different orders of Argentine birds from the "Nomenclator Avium Neotropicalium" of 1873, which is rather ancient history. The statistics of American birds must have altered considerably since that date, if we may judge from the Tanagers alone, which numbered 302 species in 1873, and in 1886 had reached 377 in number, according to Dr. Sclater's own estimate. In dividing the Neotropical Region into the sub-regions he adopts the conclusions of Prof. Newton in the "Encyclopædia Britannica," but the names of one or two of them are changed. The boundaries seem to be extremely natural, according to our present state of knowledge, though we would scarcely consider the Central American sub-region (or the Trans-panamic sub-region, as Dr. Sclater renames it) to be bounded on the north by Tehuantepec! The author probably intended to give only a general outline, for the northern boundaries of the Central American sub-region are much more elaborately defined in fact.

R. BOWDLER SHARPE.

OUR BOOK SHELF.

The Chemistry of the Coal-tar Colours. From the German of Dr. R. Benedikt. Translated, with Additions, by Dr. E. Knecht. Second Edition. (London: George Bell and Sons, 1889.)

DR. BENEDIKT'S little book is a standard treatise in Germany, where the literature of the coal-tar colours is fast becoming a most important branch of the general literature of applied chemistry; and Dr. Knecht has done excellent service in making the work more generally known to English readers by means of his translation. It is remarkable that, although England may be said to have originated the coal-tar colour industry, she has contributed comparatively little to the general literature of the subject. Practically, all the systematized information we possess has come to us through the medium of French and German manuals. A number of our chemists could be named who have communicated original memoirs on the constitution of organic colouring-matters to the recognized organs of chemical research, but their work is very special in its character, and appeals rather to the pure chemist than to the technologist, and hence is seldom read by the latter. The want of a good, sound, and comprehensive treatise on the subject

of the coal-tar colour industry has, we think, not been without its influence on the development of this branch of applied organic chemistry in this country. Dr. Knecht's translation merits a place on the bookshelf of every person engaged in the manufacture and use of the so-called coal-tar colours.

A Bibliography of Geodesy. By J. Howard Gore, B.S., Ph.D. (Washington: Government Printing Office, 1889.)

THIS valuable work forms Appendix No. 16 to the 1887 Report of the United States Coast and Geodetic Survey, and is another example of the disinterested energy displayed by our Transatlantic cousins in scientific matters. With great perseverance, and at the cost of much time and trouble, Mr. Gore personally explored thirty-four of the principal libraries of America and Europe, and numerous minor libraries by proxy; and, in addition, he checked and completed many of his references by correspondence with the living authors of both continents. The extent of his labours is shown by the four hundred columns of references, and short remarks where the title alone is not sufficiently explanatory. An alphabetical arrangement is adopted, and this includes authors, abbreviations, and subjects.

It is gratifying to note that our own country, besides the assistance rendered by its libraries, lends its aid to such an important work in the shape of a manuscript supplement by Colonel Herschel to his pendulum bibliography, which was placed unreservedly at Mr. Gore's disposal, through the courtesy of the Royal Society. After the offers of publication made by various institutions, including the International Geodetic Association at Berlin, no further testimony to Mr. Gore's fitness for the work is needed, and the compiler is justly proud "to see the results of his labours issuing from an institution of his own country, which throughout the world is the recognized advance guard in geodetic science."

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

The Method of Quarter Squares.

I OMITTED any reference to Leslie in my review of Mr. Blater's table (NATURE, vol. xl. p. 573), as I have never supposed that he was an independent discoverer of the method, or an independent calculator of a table, of quarter squares. I have referred to his table in my Report on Mathematical Tables Brit. Assoc. Report, 1873, p. 23; and the passage quoted by Prof. Carey Foster (p. 593) is given in full in the preface to Mr. Blater's table. It seems to me that the words in question—"This application of a table of quarter squares, as it is derived from the simplest principles, might have readily occurred to a mathematician; yet I have nowhere seen it brought into practical use till, last summer, I met with, at Paris, a small book by Antoine Voisin, printed in 1817"—do not indicate an independent discovery; and this view is confirmed by the fact that, in the first edition of the "Philosophy of Arithmetic" (1817), Leslie makes no mention of quarter squares. It was only in the second edition (1820), after having seen Voisin's work in the previous year, that he added, at the end of the volume, an account of the method, and a table extending to 2000. The table was copied, I presume, from Voisin, as Leslie does not claim it as the result of his own calculation. In the British Association Report I have described it as "reprinted from Voisin," and have pointed out that it did not appear in the first edition. In the preface to Mr. Blater's letter it is described as "an extract from Voisin's table." Although we may, I think, infer, almost

with certainty, that the table is only a reprint,¹ it is to be regretted that Leslie did not say so explicitly.

J. W. L. GLAISHER.

Trinity College, Cambridge, October 26.

Darwinism.

MR. ROMANES states that it is "absurd" to call his essay on physiological selection an elaborate (I said "laborious") attack upon Mr. Darwin's theory of the origin of species. In that essay I find these words (p. 345), "the theory of natural selection has been misnamed: it is not strictly speaking a theory of the origin of species"; and on p. 403, "the theory of physiological selection [*i.e.* Dr. Romanes's theory] has this advantage over every other theory that has ever been propounded on the origin of species"; and again, "the problem of the origin of species which, as shown in the preceding paper [*viz.* the laborious essay], his [Mr. Darwin's] theory of natural selection serves only in small part to explain."

On the other hand, Mr. Darwin entitled his great work, "The Origin of Species by means of Natural Selection, or the preservation of favoured races in the struggle for life." He considered his theory of natural selection to be a theory of the origin of species. Mr. Romanes says it is not. I say that this is an attack on Mr. Darwin's theory, and about as simple and direct an attack as possible. Why Mr. Romanes wishes us to believe that he did not attack Mr. Darwin's theory it is difficult to conceive. That he should hope to persuade anyone that it is absurd to call his essay an attack on Mr. Darwin's theory when this is what it distinctly professes to be is curious. I trust you will not permit an empty discussion on this matter, but leave it to your readers to find out by reference to the Proc. Linn. Soc., vol. xix., where the absurdity exists.

E. RAY LANKESTER.

42 Half-moon Street, November 1.

Record of British Earthquakes.

WILL you allow me to ask your readers to help me in compiling notes of the earthquakes felt in this country during the present and following years?

Mr. Mallet's great Catalogue of all recorded earthquakes ends, as is well known, with the year 1842. Previously to this, Mr. David Milne had published a series of papers on the earthquakes of Great Britain in the *Edinburgh New Philosophical Journal* (vols. xxxi. to xxxvi. for the years 1841-44). These papers, which are of very great value, bring down our record to the end of August 1843. In recent years we have had the Catalogues of Prof. J. P. O'Reilly (Trans. Roy. Irish Acad., vol. xxviii. pp. 285-316 and 489-708) and the late Mr. W. Roper (published by T. Bell, Observer Office, Lancaster). The latter is a useful chronological list of shocks felt during the Christian era, down to February 10, 1889; but, except in a few cases, it is little more than a list. Prof. O'Reilly's important catalogues are arranged alphabetically according to the localities affected, and do not pretend to give detailed information with reference to the shocks themselves.

To make our seismic record more complete, I propose, therefore, to compile a descriptive list of British shocks noticed in newspapers and scientific journals from the time at which Mr. Milne's Catalogue closes down to the end of the year 1888; and I should be very grateful if your readers can in any way help me in this work.

What I wish particularly to ask for, however, is information relating to the shocks of the present and future years. For our knowledge of British earthquakes we must at present rely to a great extent on newspaper accounts; and these accounts, which for some points are fairly trustworthy, become difficult of access in after years. If any of your readers are willing to assist me in preserving these notices in a convenient and systematic form, may I ask if they would be good enough to send, to the address below, the names and dates of newspapers, and more especially local ones, in which any descriptions, however short, are given of British shocks? It is hardly necessary to say that any other notes, communicated by those who have felt the shocks or observed their effects, would be of great value, and would be most thankfully received.

The days are past for compiling earthquake catalogues for the

¹ After quoting the full title of Voisin's table, Leslie refers to his own table as "the specimen which I have given."